CLAIMS

1. A white color organic electroluminescence device comprising:

a cathode;

an anode; and

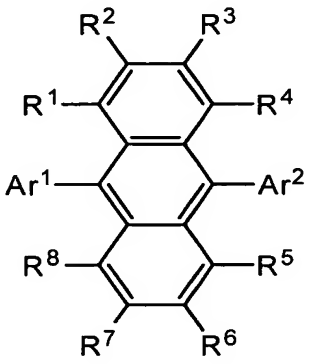
one or more organic thin film layers sandwiched between the two electrodes and including at least a light emitting layer, wherein the light emitting layer has a laminate comprising a bluish color light emitting layer and a yellow-to-reddish color light emitting layer; and

the light emitting layer comprises an asymmetric compound containing a condensed ring.

2. A white color organic electroluminescence device according to claim 1, wherein the light emitting layer consists of the bluish color light emitting layer and the yellow-to-reddish color light emitting layer.

3. A white color organic electroluminescence device according to claim 1, wherein the bluish color light emitting layer comprises a bluish color host material and a bluish color dopant, and the bluish color host material comprises an asymmetric compound containing a condensed ring.

4. A white color organic electroluminescence device according to claim 1, wherein the asymmetric compound containing a condensed ring comprises an asymmetric anthracene-based compound represented by the following general formula (I):



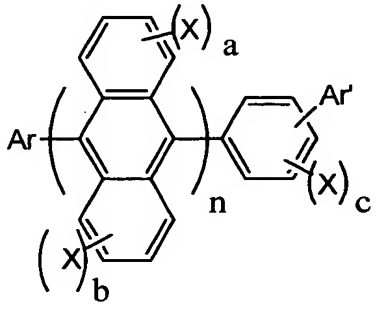
(I)

wherein Ar^1 and Ar^2 each independently represent a substituted or unsubstituted aryl group having 6 to 50 nuclear carbon atoms, provided that Ar^1 and Ar^2 do not have the same structure; and

R^1 to R^8 each independently represent a hydrogen atom, a substituted or unsubstituted aryl group having 6 to 50 nuclear carbon atoms, a substituted or unsubstituted aromatic heterocyclic group having 5 to 50 nuclear atoms, a substituted or unsubstituted alkyl group having 1 to 50 carbon atoms, a substituted or unsubstituted alkoxy group having 1 to 50 carbon atoms, a substituted or unsubstituted aralkyl group having 6 to 50 carbon atoms, a substituted or unsubstituted aryloxy group having 5 to 50 nuclear atoms, a substituted or unsubstituted arylthio group having 5 to 50 nuclear

atoms, a substituted or unsubstituted alkoxycarbonyl group having 1 to 50 carbon atoms, a carboxyl group, a halogen atom, a cyano group, a nitro group, or a hydroxyl group.

5. A white color organic electroluminescence device according to claim 1, wherein the asymmetric compound containing a condensed ring comprises an asymmetric anthracene-based compound represented by any one of the following general formulae (II) to (IV):



(II)

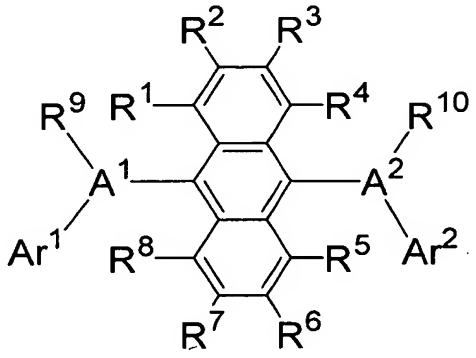
wherein Ar represents a substituted or unsubstituted fused aromatic ring residue having 10 to 50 nuclear carbon atoms;

Ar' represents a substituted or unsubstituted aryl group having 6 to 50 nuclear carbon atoms, and the number of Ar's may be two or more;

X represents a substituted or unsubstituted aryl group having 6 to 50 nuclear carbon atoms, a substituted or unsubstituted aromatic heterocyclic group having 5 to 50 nuclear atoms, a substituted or unsubstituted alkyl group having 1 to 50 carbon atoms, a substituted

or unsubstituted alkoxy group having 1 to 50 carbon atoms, a substituted or unsubstituted aralkyl group having 6 to 50 carbon atoms, a substituted or unsubstituted aryloxy group having 5 to 50 nuclear atoms, a substituted or unsubstituted arylthio group having 5 to 50 nuclear atoms, a substituted or unsubstituted alkoxycarbonyl group having 1 to 50 carbon atoms, a carboxyl group, a halogen atom, a cyano group, a nitro group, or a hydroxyl group; and

a, **b**, and **c** each represent an integer of 0 to 4, and **n** represents an integer of 1 to 3;

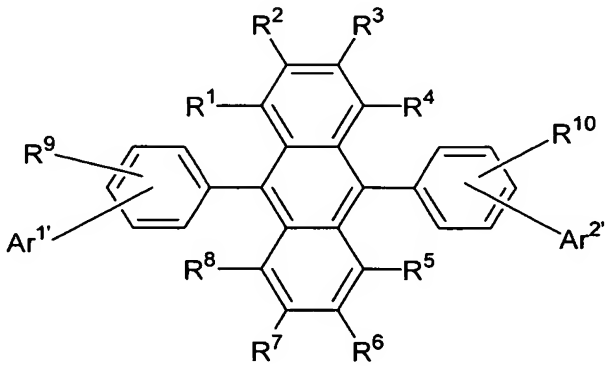


(III)

wherein A^1 and A^2 each independently represent a substituted or unsubstituted fused aromatic ring residue having 10 to 20 nuclear carbon atoms;

Ar^1 and Ar^2 each independently represent a hydrogen atom, or a substituted or unsubstituted aryl group having 6 to 50 nuclear carbon atoms, and each of the number of Ar^1s and the number of Ar^2s may be two or more; and

R^1 to R^{10} each independently represent a hydrogen atom, a substituted or unsubstituted aryl group having 6 to 50 nuclear carbon atoms, a substituted or unsubstituted aromatic heterocyclic group having 5 to 50 nuclear atoms, a substituted or unsubstituted alkyl group having 1 to 50 carbon atoms, a substituted or unsubstituted alkoxy group having 1 to 50 carbon atoms, a substituted or unsubstituted aralkyl group having 6 to 50 carbon atoms, a substituted or unsubstituted aryloxy group having 5 to 50 nuclear atoms, a substituted or unsubstituted arylthio group having 5 to 50 nuclear atoms, a substituted or unsubstituted alkoxycarbonyl group having 1 to 50 carbon atoms, a carboxyl group, a halogen atom, a cyano group, a nitro group, or a hydroxyl group, and each of the number of R^9s and the number of R^{10}s may be two or more, provided that no symmetrical group binds to each of 9-position and 10-position of central anthracene;



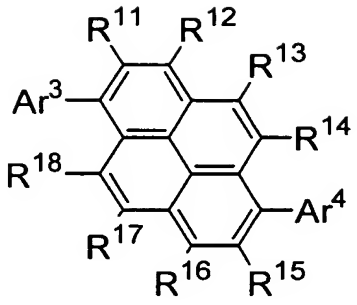
(IV)

wherein $Ar^{1'}$ and $Ar^{2'}$ each independently represent a substituted

or unsubstituted aryl group having 6 to 50 nuclear carbon atoms, and each of the number of Ar^1's and the number of Ar^2's may be two or more; and

R^1 to R^{10} each independently represent a hydrogen atom, a substituted or unsubstituted aryl group having 6 to 50 nuclear carbon atoms, a substituted or unsubstituted aromatic heterocyclic group having 5 to 50 nuclear atoms, a substituted or unsubstituted alkyl group having 1 to 50 carbon atoms, a substituted or unsubstituted alkoxy group having 1 to 50 carbon atoms, a substituted or unsubstituted aralkyl group having 6 to 50 carbon atoms, a substituted or unsubstituted aryloxy group having 5 to 50 nuclear atoms, a substituted or unsubstituted arylthio group having 5 to 50 nuclear atoms, a substituted or unsubstituted alkoxycarbonyl group having 1 to 50 carbon atoms, a carboxyl group, a halogen atom, a cyano group, a nitro group, or a hydroxyl group, and each of the number of R^9s and the number of R^{10}s may be two or more, provided that no symmetrical group binds to each of 9-position and 10-position of central anthracene.

6. A white color organic electroluminescence device according to claim 1, wherein the asymmetric compound containing a condensed ring comprises an asymmetric pyrene-based compound represented by the following general formula (V):



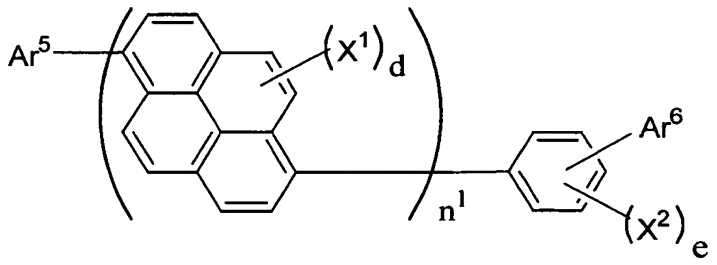
(V)

wherein Ar^3 and Ar^4 each independently represent a substituted or unsubstituted aryl group having 6 to 50 nuclear carbon atoms, provided that Ar^3 and Ar^4 do not have the same structure; and

R^{11} to R^{18} each independently represent a hydrogen atom, a substituted or unsubstituted aryl group having 6 to 50 nuclear carbon atoms, a substituted or unsubstituted aromatic heterocyclic group having 5 to 50 nuclear atoms, a substituted or unsubstituted alkyl group having 1 to 50 carbon atoms, a substituted or unsubstituted alkoxy group having 1 to 50 carbon atoms, a substituted or unsubstituted aralkyl group having 6 to 50 carbon atoms, a substituted or unsubstituted aryloxy group having 5 to 50 nuclear atoms, a substituted or unsubstituted arylthio group having 5 to 50 nuclear atoms, a substituted or unsubstituted alkoxycarbonyl group having 1 to 50 carbon atoms, a carboxyl group, a halogen atom, a cyano group, a nitro group, or a hydroxyl group.

7. A white color organic electroluminescence device according

to claim 1, wherein the asymmetric compound containing a condensed ring comprises an asymmetric pyrene-based compound represented by any one of the following general formulae (VI) to (IX):



(VI)

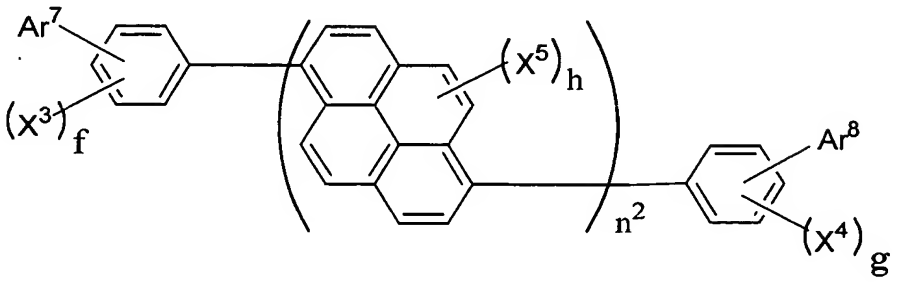
wherein Ar^5 represents a substituted or unsubstituted fused aromatic ring residue having 10 to 50 nuclear carbon atoms;

Ar^6 represents a substituted or unsubstituted aryl group having 6 to 50 nuclear carbon atoms, and the number of Ar^6s may be two or more;

X^1 and X^2 each independently represent a substituted or unsubstituted aryl group having 6 to 50 nuclear carbon atoms, a substituted or unsubstituted aromatic heterocyclic group having 5 to 50 nuclear atoms, a substituted or unsubstituted alkyl group having 1 to 50 carbon atoms, a substituted or unsubstituted alkoxy group having 1 to 50 carbon atoms, a substituted or unsubstituted aralkyl group having 6 to 50 carbon atoms, a substituted or unsubstituted aryloxy group having 5 to 50 nuclear atoms, a substituted or unsubstituted arylthio group having 5 to 50 nuclear atoms, a substituted or unsubstituted alkoxycarbonyl group having 1 to 50 carbon atoms, a carboxyl group, a halogen atom, a cyano group, a nitro group,

or a hydroxyl group; and

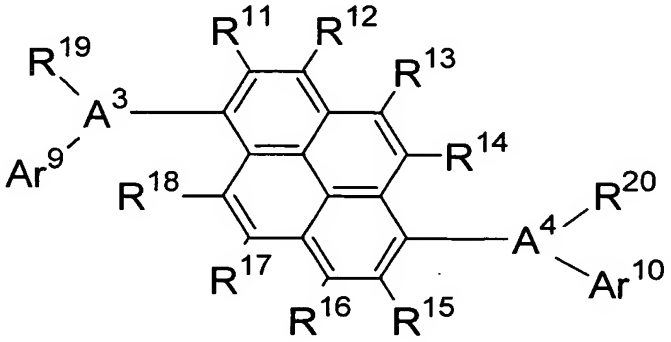
d represents an integer of 0 to 8, **e** represents an integer of 0 to 4, and n^1 represents an integer of 1 to 3;



(VII)

wherein Ar^7 and Ar^8 each independently represent a substituted or unsubstituted aryl group having 6 to 50 nuclear carbon atoms, and each of the number of Ar^7s and the number of Ar^8s may be two or more; X^3, X^4, and X^5 each independently represent a substituted or unsubstituted aryl group having 6 to 50 nuclear carbon atoms, a substituted or unsubstituted aromatic heterocyclic group having 5 to 50 nuclear atoms, a substituted or unsubstituted alkyl group having 1 to 50 carbon atoms, a substituted or unsubstituted alkoxy group having 1 to 50 carbon atoms, a substituted or unsubstituted aralkyl group having 6 to 50 carbon atoms, a substituted or unsubstituted aryloxy group having 5 to 50 nuclear atoms, a substituted or unsubstituted arylthio group having 5 to 50 nuclear atoms, a substituted or unsubstituted alkoxycarbonyl group having 1 to 50 carbon atoms, a carboxyl group, a halogen atom, a cyano group, a nitro group, or a hydroxyl group; and

f and **g** each represent an integer of 0 to 4, **h** represents an integer of 0 to 8, and n^2 represents an integer of 1 to 3, provided that no symmetrical group binds to each of 1-position and 6-position of central pyrene;



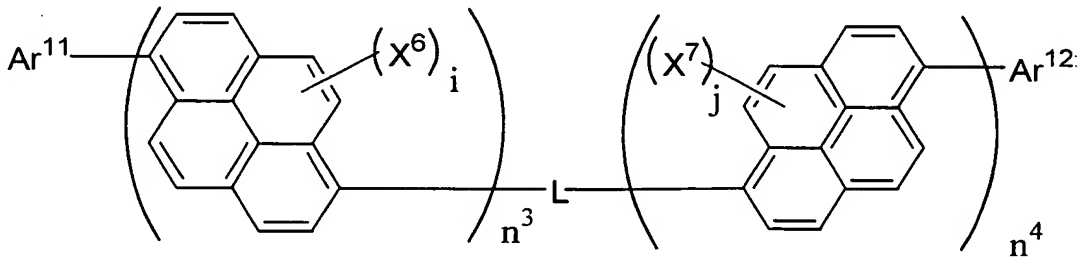
(VIII)

wherein A^3 and A^4 each independently represent a substituted or unsubstituted fused aromatic ring residue having 10 to 20 nuclear carbon atoms;

Ar^9 and Ar^{10} each independently represent a hydrogen atom, or a substituted or unsubstituted aryl group having 6 to 50 nuclear carbon atoms, and each of the number of Ar^9s and the number of Ar^{10}s may be two or more; and

R^{11} to R^{20} each independently represent a hydrogen atom, a substituted or unsubstituted aryl group having 6 to 50 nuclear carbon atoms, a substituted or unsubstituted aromatic heterocyclic group having 5 to 50 nuclear atoms, a substituted or unsubstituted alkyl group having 1 to 50 carbon atoms, a substituted or unsubstituted alkoxy group having 1 to 50 carbon atoms, a substituted or unsubstituted

aralkyl group having 6 to 50 carbon atoms, a substituted or unsubstituted aryloxy group having 5 to 50 nuclear atoms, a substituted or unsubstituted arylthio group having 5 to 50 nuclear atoms, a substituted or unsubstituted alkoxycarbonyl group having 1 to 50 carbon atoms, a carboxyl group, a halogen atom, a cyano group, a nitro group, or a hydroxyl group, and each of the number of R^{19}s and the number of R^{20}s may be two or more, provided that no symmetrical group binds to each of 1-position and 6-position of central pyrene;



(IX)

wherein Ar^{11} and Ar^{12} each independently represent a substituted or unsubstituted aryl group having 6 to 50 nuclear carbon atoms; X^6 and X^7 each independently represent a substituted or unsubstituted aryl group having 6 to 50 nuclear carbon atoms, a substituted or unsubstituted aromatic heterocyclic group having 5 to 50 nuclear atoms, a substituted or unsubstituted alkyl group having 1 to 50 carbon atoms, a substituted or unsubstituted alkoxy group having 1 to 50 carbon atoms, a substituted or unsubstituted aralkyl group having 6 to 50 carbon atoms, a substituted or unsubstituted aryloxy

group having 5 to 50 nuclear atoms, a substituted or unsubstituted arylthio group having 5 to 50 nuclear atoms, a substituted or unsubstituted alkoxycarbonyl group having 1 to 50 carbon atoms, a carboxyl group, a halogen atom, a cyano group, a nitro group, or a hydroxyl group;

L represents a substituted or unsubstituted arylene group having 6 to 50 nuclear carbon atoms, or a substituted or unsubstituted divalent aromatic heterocyclic group having 3 to 50 nuclear atoms; and

i and **j** each represent an integer of 0 to 8, and n^3 and n^4 each represent an integer of 1 to 3

8. A white color organic electroluminescence device according to claim 3, wherein the bluish color dopant comprises at least one compound selected from a group consisting of a styrylamine, an amine-substituted styryl compound, a compound containing an amine-substituted fused aromatic ring, and a compound containing a fused aromatic ring.

9. A white color organic electroluminescence device according to claim 1, comprising the anode, the bluish color light emitting layer, the yellow-to-reddish color light emitting layer, and the cathode in this order, wherein the yellow-to-reddish color light emitting layer contains the same host material as that of the bluish

color light emitting layer and a yellow-to-reddish color dopant.

10. A white color organic electroluminescence device according to claim 9, wherein the yellow-to-reddish color dopant comprises a compound having multiple fluoranthene skeletons.

11. A white color organic electroluminescence device according to claim 9, wherein the yellow-to-reddish color dopant comprises a compound having a fluorescent peak wavelength of 540 nm to 700 nm.

12. A white color organic electroluminescence device according to claim 1, wherein each of the bluish color light emitting layer and the yellow-to-reddish color light emitting layer has a thickness of 5 nm or more.